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09/807,038	07/23/2001	Masayuki Fujita	1581/00258	9637

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EXAMINER

MCCLENDON, SANZA L

ART UNIT

PAPER NUMBER

1711

DATE MAILED: 10/07/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/807,038

Applicant(s)

FUJITA ET AL.

Examiner

Sanza L McClendon

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1711

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 23 July 2001.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-79 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 46-63 is/are allowed.
- 6) ☒ Claim(s) 1-19, 21 and 64-79 is/are rejected.
- 7) ☒ Claim(s) 20 and 22-45 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

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DETAILED ACTION

*Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-9 and 11-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Fujita et al (WO 99/05216).

Note Us 6,407,146 B1 to Fujita et al is being used as the English language equivalent to WO 99/05216.

Fujita et al teaches curable compositions comprises a vinyl polymer having at least one crosslinkable silyl groups represented by the formula  $-\text{Si}(\text{R}^1)_{2-b}(\text{Y})_b\text{O}]_m-\text{Si}(\text{R}^2)_{3-a}(\text{Y})_a$  and an epoxy resin or a polyether polymer having at least one crosslinkable silyl group. The vinyl polymer can be a methacrylic or acrylic polymer. This anticipates claims 3-4 and 13-14. Said vinyl polymer with the crosslinkable silyl group has a molecular weight distribution of less than 1.8. This anticipates claims 2 and 12. Said vinyl polymer can be synthesized by various methods, such as radical polymerization both ordinary radiation and controlled radical. Wherein controlled can be either chain transfer agent method or living radical polymerization method. Said living radical polymerization can be done by using cobalt-porphyrin complexes or an atom transfer radical polymerization method using organic halides as initiators and transition metal complexes as catalyst. Wherein, Fujita et al teaches that the preferred living radical polymerization method is "atom transfer radical polymerization"(ATRP) method. Said ATRP method and living polymerization methods are explained in columns 6-11. These teachings

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appear to anticipate claims 5-9, 15-19. Fujita et al teaches in addition to the above-described components the composition can have other components, such as ultraviolet curable resins and oxygen-curable resins. These components anticipate compound (B) and (C) of claims 1 and 11, respectively.

The inventions of claims 1-9 and 11-19 are anticipated by the reference.

*Claim Rejections - 35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fujita et al (WO 99/05216).

Fujita et al does not expressly teach using an unsaturated acrylic compound as the photocurable substance. However, it would have been obvious to one having ordinary skill in the art to use any type of known photocurable acrylic monomers, compounds or oligomers on the basis of its suitability for the intended use as a matter of obvious design choice, such as acrylic substituted polymers with acrylic monomers to produce acrylic resin compositions. In re Leshin, 125 USPQ 416.

5. Claims 64-79 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujita et al (WO 99/05216) in view of Kawakubo et al (4,788,254).

Fujita et al teaches curable compositions comprises a vinyl polymer having at least one crosslinkable silyl group represented by

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the formula  $-\text{Si}(\text{R}^1)_{2-b}(\text{Y})_b\text{O}]_m-\text{Si}(\text{R}^2)_3-\text{a}(\text{Y})_a$  and an epoxy resin or a polyether polymer having at least one crosslinkable silyl group. The vinyl polymer can be a methacrylic or acrylic polymer. This anticipates claims 66-67. Said vinyl polymer with the crosslinkable silyl group has a molecular weight distribution of less than 1.8. This anticipates claim 65. Said vinyl polymer can be synthesized by various methods, such as radical polymerization both ordinary radiation and controlled radical. Wherein controlled can be either chain transfer agent method or living radical polymerization method. Said living radical polymerization can be done by using transition metal complexes or an atom transfer radical polymerization method using organic halides as initiators and transition metal complexes as catalyst. Wherein, Fujita et al teaches that the preferred living radical polymerization method is "atom transfer radical polymerization"(ATRP) method. Said ATRP method and living polymerization methods are explained in columns 6-11. These teachings appear to anticipate claims 69-72. Fujita et al does not expressly teach using a compound having one silanol group per molecule and/or a compound capable of reacting with moisture to give a compound having at one-silanol groups per molecule. However, Fujita et al teaches in addition to the above-described components the composition can have other components oxygen-curable resins.

Kawakubo et al teaches (A) a vinyl polymers comprising at least one crosslinkable silyl group with (B) a compound having one silanol group and/or a compound that reacts with water or moisture to form a compound having one silanol group. Said (B) component can be any compound comprising one silanol group or compounds having the formulas (i)  $(\text{R}^{12})_3\text{SiOH}$ , wherein the definitions for the formula can be found in column 15-column 17 and (ii) compounds having Si-N linkages, such as  $(\text{CH}_3)_3\text{SiNSi}(\text{CH}_3)_3$ . Kawakubo et al teaches that when mastic type sealants are produced from components (A) and (B), component (B) is preferably the above Si-N compound or bis (trimethylsilyl) acetamide.

Fujita et al and Kawakubo et al are analogous art because they are from the same field of endeavor that is the art of moisture curable silyl-containing vinyl polymer art.

Therefore, it would have been obvious for one of ordinary skill in the art to use the silanol compounds of Kawakubo et al as the

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moisture curable compounds in the compositions as taught by Fujita et al. The motivation would have been to improve tensile properties, such as elongation in the cured product of the polymer composition with the addition of the silanol compounds, as taught by Kawakubo et al—column 17, ll 65 to end.

The inventions of claims 64-79 are read in the combination of references.

*Claim Rejections - 35 USC § 112*

6. The following is a quotation of the second paragraph of 35 U.S.C. 112: The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
7. The term "high" in claim 21 is a relative term which renders the claim indefinite. The term "high" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. It is not clear what is considered a high molecular weight in the claim. Clarification is requested.

*Allowable Subject Matter*

8. Claim 20 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
9. The following is a statement of reasons for the indication of allowable subject matter: The prior art fails to teach using tung oil or a liquid diene polymer as an air oxidation-curable substance in a composition comprising vinyl polymer having at least one crosslinkable silyl groups having the formula  $-\text{Si}(\text{R}^1)_{2-b}(\text{Y})_b\text{O}]_m-\text{Si}(\text{R}^2)_{3-a}(\text{Y})_a$ .
10. Claims 22-45 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

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11. Claims 46-63 are allowed.

12. The following is an examiner's statement of reasons for allowance: The prior art fails to teach or fairly suggest a curable composition comprising a vinyl polymer having at least one crosslinkable silyl groups having the formula  $-\text{Si}(\text{R}^1)_{2-b}(\text{Y})_b\text{O}]_m-\text{Si}(\text{R}^2)_{3-a}(\text{Y})_a$  in combination with a reactive plasticizer comprising a vinyl polymer having not more than one crosslinkable silyl groups having the formula  $-\text{Si}(\text{R}^1)_{2-b}(\text{Y})_b\text{O}]_m-\text{Si}(\text{R}^2)_{3-a}(\text{Y})_a$  on average per molecule. Although the prior teaches adding plasticizers to similar compositions.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### *Conclusion*

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sanza L McClendon whose telephone number is (703) 305-0505. The examiner can normally be reached on Monday through Friday 8:00 to 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on (703) 308-2462. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0657.

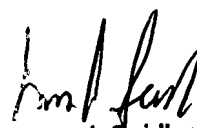
Sanza L McClendon

Examiner

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SMc

September 26, 2002

  
James J. Seidleck  
Supervisory Patent Examiner  
Technology Center 1700